Effects of Declining pH Levels of Seawater Caused by Ocean Acidification on Zooxanthellae and Coral Bleaching

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This project studied the Effects of Declining pH Levels of Seawater Caused by Ocean Acidification on Zooxanthellae and Coral Bleaching. This is important because coral reefs are considered as one of the most diverse and valuable ecosystems in nature; however, approximately 30% of corals in the world were reported bleached or dead over the past 25 years due to global warming and ocean acidification. The independent variable in this study was the pH levels of seawater, in which was used to culture zooxanthellae, and the dependent variable was the zooxanthellae population. Zooxanthellae were cultured in seawater with different pH levels of 7.2, 7.7, 8.0 and 8.2 at 35 - 37 degrees Fahrenheit. The data suggested that the pH levels had a direct impact on zooxanthellae's well being, as the pH level of seawater decreased, the zooxanthellae population also decreased. Specifically, over 16 days, the average zooxanthellae population of 8.2 pH was 130,000 zooxanthellae cells, significantly higher than the average population of 1,000 of the 7.2 pH seawater solution. In addition, it was found that as the zooxanthellae population of the solution of pH 7.7 and 8.0 would also increase again with an increase in pH levels. Some of the data was influenced by a short period of experimenting. Future studies should explore potential applications of alkalizing seawater on actual corals as well as the impact ocean acidification and global warming on coral bleaching.

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